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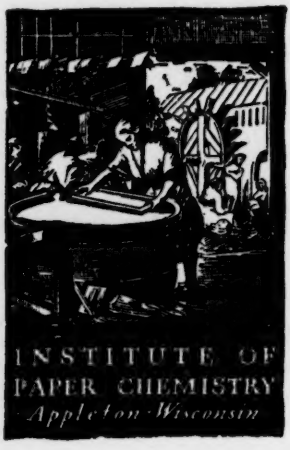

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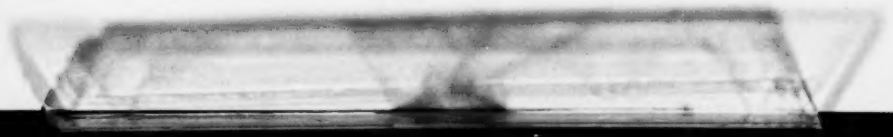

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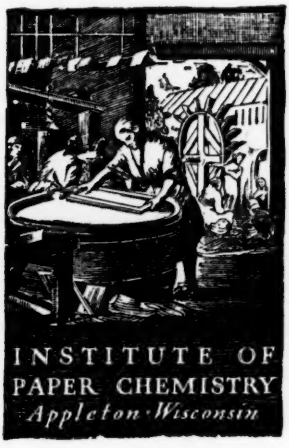

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2,604,256 958
2,604,354 955
2,604,421 961
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2,604,426 970
2,604,824 962

CANADIAN PATENTS

473,228 641
473,266 641
473,352 628
473,674 61
474,431 84
474,432 83
474,507 85
474,872 76
474,873 76
474,877 64
474,901 63
474,902 79
474,930 82
475,003 73
475,122 73
475,134 85
475,138 63
475,144 75
475,209 61
475,216 80
475,217 303
475,218 84
475,219 81
475,258 71
475,315 83
475,350 66
475,376 80
475,439 71
475,509 81
475,517 79
475,518 79
475,544 76
475,580 68
475,589 66
475,642 72
475,648 82
475,652 88
475,765 78
475,798 84
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475,819 78
475,847 67
475,924 75
475,983 151
476,058 154
476,130 150
476,144 152
476,237 151
476,278 158
476,279 158
476,291 154
476,298 148
476,357 149
476,501 148
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476,667 155
476,669 146
476,675 151
476,691 154
476,712 156
476,731 151
476,880 222
476,918 221
476,928 229
476,929 218
477,046 220
477,081 213
477,082 227
477,096 226
477,098 217
477,111 212
477,116 218
477,154 222
477,155 222
477,210 217
477,229 228
477,265 230
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477,381 219
477,431 223
477,466 225
477,469 219
477,500 228
477,588 222
477,617 224
477,618 224
477,670 230
477,730 221
477,738 303
477,762 294
477,763 298
477,772 291
477,800 301
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477,894 298
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477,959 293
478,025 293
478,026 305
478,113 297
478,118 291
478,224 295
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478,555 386
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478,619 375
478,732 460
478,802 370
478,858 376
478,859 374
478,877 369
478,901 375
478,960 372
479,071 385
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479,145 370
479,220 464
479,323 452
479,371 456
479,372 455
479,404 460
479,433 457
479,447 461
479,450 462
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479,621 465
479,645 467
479,665 461
479,666 466
479,736 450
479,747 452
479,770 455
479,773 454
479,799 468
479,800 462
479,932 453
479,933 451
479,945 460
479,950 553
479,980 455
480,048 554
480,049 554
480,101 541
480,110 551
480,120 644
480,121 549
480,145 536
480,156 548
480,197 536
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480,404 538
480,449 536
480,456 552
480,563 541
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480,631 549
480,638 551
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481,034 627
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481,640 711
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481,851 707
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484,613 959
484,626 974
484,634 956
484,658 972
484,663 957
484,718 962
484,783 955
484,934 969
484,964 970
484,975 953

Periodicals Currently Received

Acta Chemica Scandinavica. Einar Munksgaard, Nørregade 6, Copenhagen, Denmark.

AERO Research Technical Notes. The Technical Service Dept., Aero Research Ltd., Duxford, Cambridge, England.

Allgemeine Papier-Rundschau. Fürstenbergstrasse 175, Frankfurt a. M. 4, Germany.

American Boxmaker. Howard Publishing Co., 111 W. Washington St., Chicago 2, Ill.

American Ceramic Society Bulletin. 2525 N. High St., Columbus 2, Ohio.

American Dyestuff Reporter. Howes Publishing Co., Inc., 44 E. 23rd St., New York 10, N.Y.

American Forests. The American Forestry Association, 919 17th St., N.W., Washington 6, D.C.

American Ink Maker. McNair-Dorland Co., Inc., 254 W. 31st St., New York 1, N.Y.

American Journal of Public Health. See American Journal of Public Health and the Nation's Health.

American Journal of Public Health and the Nation's Health. American Public Health Association, Inc., 1790 Broadway (at 58th St.), New York 19, N.Y.

American Machinist. McGraw-Hill Publishing Co., Inc., 330 W. 42nd St., New York 36, N.Y.

American Newspaper Publishers Association. Research Bulletin. American Newspaper Publishers Association, 370 Lexington Ave., New York 17, N.Y.

American Paper Converter. Howard Publishing Co., 111 W. Washington St., Chicago 2, Ill.

American Paper Merchant. Howard Publishing Co., 111 W. Washington St., Chicago 2, Ill.

American Photography. American Photographic Publishing Co., 553-5 Avenue of Americas, New York 11, N.Y.

American Pressman. International Printing Pressmen and Assistants' Union of North America, Pressmen's Home, Tenn.

American Printer. Moore Publishing Co., Inc., 48 W. 38th St., New York 18, N.Y.

American Pulp and Paper Mill Superintendents Association, Inc., Yearbook. American Pulp and Paper Mill Superintendents Association, Inc., 111 W. Washington St., Chicago 2, Ill.

Analytical Chemistry. American Chemical Society, 1155 16th St., N.W., Washington 6, D.C.

Angewandte Chemie [continuation of A. Wissenschaftlicher Teil] Verlag Chemie, G.m.b.H., Hauptstrasse 127, Weinheim/Bergstrasse, Germany.

Angewandte Chemie. B. Technisch-wirtschaftlicher Teil. See Chemie-Ingenieur-Technik.

Annalen der Chemie, Justus Liebigs. Verlag Chemie, G.m.b.H., Weinheim/Bergstrasse, Germany.

Annual Reports of the Society of Chemical Industry on the Progress of Applied Chemistry. See Reports on the Progress of Applied Chemistry.

Annual Reports on the Progress of Chemistry. (Chemical Society of London.) The Chemical Society, Burlington House, Piccadilly, London, W. 1, England.

Annual Review of Biochemistry. Annual Reviews, Inc., Stanford, Calif.

Annual Review of Microbiology. Annual Reviews, Inc., Stanford, Calif.

Annual Review of Nuclear Science. Annual Reviews, Inc., Stanford, Calif.

Annual Review of Physical Chemistry. Annual Reviews, Inc., Stanford, Calif.

Archives of Biochemistry and Biophysics. Academic Press, Inc., 125 E. 23rd St., New York 10, N.Y.

ASTM Bulletin, Proceedings, and Standards. American Society for Testing Materials, 1916 Race St., Philadelphia 3, Pa.

Australian Journal of Scientific Research. Series A. Physical sciences. Series B. Biological sciences. The Editor, Australian Journal of Scientific Research. Commonwealth Scientific and Industrial Research Organization, 314 Albert St., East Melbourne, C. 2, Victoria, Australia.

Australian Pulp & Paper Industry Technical Association, Proceedings. P.O. Box 18, South Melbourne, Victoria, Australia.

Bacteriological Reviews. The Williams & Wilkins Co., Mount Royal and Guilford Aves., Baltimore 2, Md.

Bakelite Review. Bakelite Co., Union Carbide and Carbon Corp., 30 E. 42nd St., New York 17, N.Y.

Barron's National Business and Financial Weekly. 40 New St., New York 4, N.Y.

Battelle Library Review. See Battelle Technical Review.

Battelle Technical Review. Battelle Memorial Institute, 505 King Ave., Columbus 1, Ohio.

Bell Laboratories Record. Bell Telephone Laboratories Inc., 436 West St., New York 14, N.Y.

Bell System Technical Journal. American Telephone and Telegraph Co., 195 Broadway, New York 7, N.Y.

Bibliographic Index. The H. W. Wilson Co., 950-972 University Ave., New York 52, N.Y.

Bibliography of Technical Reports. U. S. Dept. of Commerce, Office of Technical Services, Washington 25, D.C.

Biochemical Journal. Cambridge University Press, American Branch, 32 E. 5th St., New York 22, N.Y.

Biological Abstracts. c/o University of Pennsylvania, 3815 Walnut St., Philadelphia 4, Pa.

Botanical Gazette. The University of Chicago Press, 5750 Ellis Ave., Chicago 37, Ill.

Bowater Papers. The Bowater Paper Corporation Ltd., 9 Park Place, St. James's, London, England.

Boxboard Containers. 22 E. Huron St., Chicago 11, Ill.

British Abstracts. A—I, General, physical, and inorganic chemistry; II, Organic chemistry; III, Physiology, biochemistry, anatomy; B—I, Chemical engineering and industrial inorganic chemistry, including metallurgy; II, Industrial organic chemistry; III, Agriculture, foods, sanitation; C—Analysis and apparatus. The Bureau of Abstracts, Colquhoun House, Broadwick St., London, W.1, England.

British Packer. Whitaker & Cam, Ltd., 311 Gray's Inn Road, Kings Cross, London, W.C.1, England.

British Paper. See Paper Market.

British Plastics. Iliffe & Sons Ltd., Dorset House, Stamford St., London, S.E.1, England.

British Printer. 2, 3 & 4 Cockspur St., London, S.W.1, England.

Building Science Abstracts. H. M. Stationery Office, York House, Kingsway, London, W.C.2, England.

Bulletin. Association Technique de l'Industrie Papetière. 154 Boulevard Haussmann, Paris (8e), France.

Bulletin de la Société chimique de France. Société chimique de France, 28, rue Saint-Dominique, Paris (7e), France.

Bulletin of Entomological Research. The Commonwealth Institute of Entomology, 41, Queen's Gate, London, S.W.7, England.

Business Week. McGraw-Hill Publishing Co., Inc., 330 W. 42nd St., New York 36, N.Y.

Canadian Chemical Processing. Westman Publications Ltd., 137 Wellington St., W., Toronto, Ontario, Canada.

Canadian Journal of Botany. Administrative Services, National Research Council, Ottawa, Canada.

Canadian Journal of Chemistry. Administrative Services, National Research Council, Ottawa, Canada.

Canadian Journal of Medical Sciences. Administrative Services, National Research Council, Ottawa, Canada.
Canadian Journal of Physics. Administrative Services, National Research Council, Ottawa, Canada.
Canadian Journal of Technology. Administrative Services, National Research Council, Ottawa, Canada.
Canadian Journal of Zoology. Administrative Services, National Research Council, Ottawa, Canada.
Canadian Patent Office Record. Commissioner of Patents, Ottawa, Canada.
Canadian Pulp and Paper Industry. Mitchell Press Ltd., 1040 W. Pender St., Vancouver, B.C., Canada.
Chemical Abstracts. American Chemical Society, 1155 16th St., N.W., Washington 6, D.C.
Chemical and Engineering News. American Chemical Society, 1155 16th St., N.W., Washington 6, D.C.
Chemical Bulletin (Chicago). Chicago Section, American Chemical Society, Inc., 86 E. Randolph St., Chicago 1, Ill.
Chemical Engineering Progress. American Institute of Chemical Engineers, 120 E. 41st St., New York 17, N.Y.
Chemical Engineering with Chemical & Metallurgical Engineering. McGraw-Hill Publishing Co., Inc., 330 W. 42nd St., New York 36, N.Y.
Chemical Industries Week. See Chemical Week.
Chemical Processing. Putman Publishing Co., 111 East Delaware Place, Chicago 11, Ill.
Chemical Reviews. The Williams & Wilkins Co., Mount Royal and Guilford Aves., Baltimore 2, Md.
Chemical Society (London). Annual Reports on the Progress of Chemistry. See Annual Reports on the Progress of Chemistry.
Chemical Week. McGraw-Hill Publishing Co., Inc., 330 W. 42nd St., New York 36, N.Y.
Chemie-Ingenieur-Technik. Verlag Chemie, G.m.b.H., Weinheim/Bergstrasse, Germany.
Chemiker-Zeitung. Dr. Alfred Hüthig Verlag, Hauptstr. 20, Heidelberg, Germany.
Chemische Berichte. Verlag Chemie, G.m.b.H., Weinheim/Bergstrasse or Berlin, Germany.
Chemisches Zentralblatt. Akademie Verlag G.m.b.H., Berlin—Verlag Chemie, G.m.b.H., Weinheim/Bergstrasse, Germany.
Chemist. The American Institute of Chemists, Inc., 60 E. 42nd St., New York 17, N.Y.
Chemist-Analyst. J. T. Baker Chemical Co., Phillipsburg, N.J.

Chemistry & Industry. Society of Chemical Industry, 56, Victoria Street, London, S.W.1, England.

Chemists' Club News. The Chemists' Club of New York, 52 E. 41st St., New York 17, N.Y.

Chemurgic Digest. National Farm Chemurgic Council, Inc., 350 5th Ave., New York 1, N.Y.

Chimie & industrie. Les Presses Documentaires, 28, rue Saint-Dominique, Paris (7e), France.

Ciba Review. Ciba Co. Inc., 627 Greenwich St., New York 14, N.Y.

Colonial Geology and Mineral Resources. H. M. Stationery Office, York House, Kingsway, London, W.C.2, England.

Colonial Plant and Animal Products. H. M. Stationery Office, York House, Kingsway, London, W.C.2, England.

Copeia. The American Society of Ichthyologists and Herpetologists, at the Museum of Zoology, University of Michigan, Ann Arbor, Mich.

Corrosion. National Association of Corrosion Engineers, Inc., 1061 M & M Building, No. 1 Main St., Houston 2, Texas.

Crane Valve World. Crane Co., 836 S. Michigan Ave., Chicago 5, Ill.

Cumulative Book Index. The H. W. Wilson Co., 950-972 University Ave., New York 52, N.Y.

Das Papier. See Papier, Das.

Digest of Literature on Dielectrics. National Research Council, 2101 Constitution Avenue, Washington 25, D.C.

Discussions of the Faraday Society. The Aberdeen University Press Ltd., 6 Upper Kirkgate, Aberdeen, Scotland.

Du Pont Magazine. E. I. du Pont de Nemours & Co. (Inc.), Wilmington, Del.

Dyestuffs. National Aniline Division, Allied Chemical & Dye Corp., 40 Rector St., New York 6, N.Y.

Ecology. Duke University Press, Box 6697, College Station, Durham, N.C.

Economic Botany. The New York Botanical Garden, New York 58, N.Y.

Electronics. McGraw-Hill Publishing Co., Inc., 330 W. 42nd St., New York 36, N.Y.

Endeavour. Imperial Chemical Industries Limited, Nobel House, Buckingham Gate, London, S.W. 1, England.

Experientia. Verlag Birkhäuser AG., 15 Elisabethenstrasse, Basel 10, Switzerland.

Fibre Containers. See Fibre Containers and Paperboard Mills.

Fibre Containers and Paperboard Mills. Board Products Publishing Co., 228 N. La Salle St., Chicago 1, Ill.

Finnish Paper and Timber. Unionsg. 19, Helsingfors, Finland.
Food Engineering. McGraw-Hill Publishing Co., Inc., 330 W. 42nd St., New York 36, N.Y.
Food Industries. See Food Engineering.
Food Research. The Garrard Press, 119-123 W. Park Ave., Champaign, Ill.
Food Science Abstracts. H. M. Stationery Office, York House, Kingsway, London, W.C.2, England.
Food Technology. The Garrard Press, 119-123 W. Park Ave., Champaign, Ill.
Foreign Commerce Weekly. Superintendent of Documents, U.S. Government Printing Office, Washington 25, D.C.
Frontier. Armour Research Foundation of Illinois Institute of Technology, Technology Center, Chicago 16, Ill.
General Electric Review. General Electric Co., 1 River Road, Schenectady 5, N.Y.
General Radio Experimenter. General Radio Co., 275 Massachusetts Ave., Cambridge 39, Mass.
Grafiska Forskningslaboratoriet, Meddelanden. Stockholm, Sweden.
Graphic Arts Monthly. The Graphic Arts Publishing Co., 608 S. Dearborn St., Chicago 5, Ill.
Harvard Business Review. Gallatin House, Soldiers Field Station, Boston 63, Mass.
Helvetica Chimica Acta. Verlag Helvetica Chimica Acta, Basel 7, Switzerland.
Holz als Roh- und Werkstoff. Springer-Verlag, Jebensstr. 1, Berlin-Charlottenburg, Germany.
Holzforschung. Technischer Verlag Herbert Cram, Berlin W35, Germany.
Illinois. University. Engineering Experiment Station. Bulletin Series and Circular Series. See University of Illinois.
Illinois Tech Engineer. Illinois Institute of Technology, 3300 Federal St., Chicago 16, Ill.
Index to the Literature of Food Investigation. See Food Science Abstracts.
Indian Print & Paper. Chartered Bank Buildings, Calcutta, 1, India.
Indian Pulp and Paper. 1-A, Vansittart Row, Calcutta, 1, India.
Industria della carta. Corso Italia 8, Milano, Italy.
Industrial and Engineering Chemistry. American Chemical Society, 1155 16th St., N.W., Washington 6, D.C.
Industrial Arts Index. The H. W. Wilson Co., 950-972 University Ave., New York 52, N.Y.

Industrial Bulletin of Arthur D. Little, Inc. Arthur D. Little, Inc., Cambridge 42, Mass.

Industrial Chemist. 33, Tothill St., Westminster, London, S.W.1, England.

Industrial Laboratories. Industrial Laboratories Publishing Co., 201 North Wells St., Chicago 6, Ill.

Industrial Quality Control. American Society for Quality Control, Room 5036, 70 E. 45th St., New York 17, N.Y.

Industrie papetière. 7, Rue Villars, Grenoble, France.

Industry Report. Containers and Packaging. Superintendent of Documents, U. S. Government Printing Office, Washington 25, D.C.

Industry Report. Pulp and Paper. Superintendent of Documents, U. S. Government Printing Office, Washington 25, D.C.

Inland Printer. Maclean-Hunter Publishing Corp., 309 W. Jackson Blvd., Chicago 6, Ill.

Instrumentation. Minneapolis-Honeywell Regulator Co., Wayne and Windram Aves., Philadelphia 44, Pa.

Instruments. The Instruments Publishing Co., Inc., 921 Ridge Ave., Pittsburgh 12, Pa.

Interchemical Review. Research Laboratories of Interchemical Corp., 432 W. 45th St., New York 36, N.Y.

Iodine Abstracts and Reviews. Chilean Iodine Educational Bureau, Inc., 120 Broadway, New York 5, N.Y.

Iowa State College Journal of Science. The Iowa State College Press, Press Building, Ames, Iowa.

Journal American Water Works Association. American Water Works Association, Inc., 521 Fifth Ave., New York 17, N.Y.

Journal of Applied Chemistry (London). Society of Chemical Industry, 56 Victoria St., London, S.W.1, England.

Journal of Applied Mechanics. The American Society of Mechanical Engineers, 29 W. 39th St., New York 18, N.Y.

Journal of Applied Physics. American Institute of Physics, 57 E. 55th St., New York 22, N.Y.

Journal of Bacteriology. The Williams & Wilkins Co., Mount Royal and Guilford Aves., Baltimore 2, Md.

Journal of Biological Chemistry. The American Society of Biological Chemists, Inc., Mount Royal and Guilford Aves., Baltimore 2, Md.

Journal of Chemical Education. Division of Chemical Education, American Chemical Society, 20th and Northampton Sts., Easton, Pa.

Journal of Chemical Physics. American Institute of Physics, 57 E. 55th St., New York 22, N.Y.

Journal of Colloid Science. Academic Press, Inc., 125 E. 23rd St., New York 10, N.Y.

Journal of Documentation. Association of Special Libraries and Information Bureaux, 4 Palace Gate, London, W. 8, England.

Journal of Economic Entomology. American Association of Economic Entomologists, University of Maryland, College Park, Md.

Journal of Forestry. 825 Mills Building, 17th St. and Pennsylvania Ave., N.W., Washington 6, D.C.

Journal of Organic Chemistry. The Williams & Wilkins Co., Mount Royal and Guilford Aves., Baltimore 2, Md.

Journal of Physical & Colloid Chemistry. See Journal of Physical Chemistry.

Journal of Physical Chemistry. American Chemical Society, 1155 16th St., N.W., Washington 6, D.C.

Journal of Polymer Science. Interscience Publishers, Inc., 250 Fifth Ave., New York 1, N.Y.

Journal of Research of the National Bureau of Standards. Superintendent of Documents, U.S. Government Printing Office, Washington 25, D.C.

Journal of Scientific Instruments. The Institute of Physics, 47, Belgrave Sq., London, S.W.1, England.

Journal of the American Ceramic Society. Ceramic Abstracts. The American Ceramic Society, Inc., 2525 N. High St., Columbus 2, Ohio.

Journal of the American Chemical Society. American Chemical Society, 1155 16th St., N.W., Washington 6, D.C.

Journal of the American Leather Chemists Association. American Leather Chemists Association, Secretary, Department of Leather Research, University of Cincinnati, Cincinnati 21, Ohio.

Journal of the American Oil Chemists' Society. The American Oil Chemists' Society, 35 E. Wacker Drive, Chicago 1, Ill.

Journal of the Chemical Society (London). The Chemical Society, Burlington House, Piccadilly, London, W.1, England.

Journal of the Forest Products Research Society. Forest Products Research Society, P.O. Box 2010, University Station, Madison 5, Wis.

Journal of The Franklin Institute. The Franklin Institute of the State of Pennsylvania, Benjamin Franklin Parkway at 20th St., Philadelphia 3, Pa.

Journal of The Institute of Packaging. The Secretary, 55-61 Moorgate, London, E.C.2, England.

Journal of the Japanese Technical Association of the Pulp and Paper Industry. No. 2 Mitsubishi Naka-14 Bldg., Marunouchi, Tokyo, Japan.

Journal of the Optical Society of America. American Institute of Physics, 57 E. 55th St., New York 22, N.Y.

Journal of the Society of Dyers and Colourists. The Society of Dyers and Colourists, 19 Piccadilly, Bradford, Yorkshire, England.

Journal of the Textile Institute. The Textile Institute, 10 Blackfriars St., Manchester 3, England.

Justus Liebigs Annalen der Chemie. See Annalen der Chemie, Justus Liebigs.

Kodak Research Laboratories. Abridged Scientific Publications. Research Laboratories, Eastman Kodak Co., Kodak Park Works, Rochester, N.Y.

Kodak Research Laboratories. Monthly Abstract Bulletin. Research Laboratories, Eastman Kodak Co., Kodak Park Works, Rochester, N.Y.

Kolloid Zeitschrift, zur Zeit vereinigt mit den Kolloid-Beiheften. Verlag Dr. Dietrich Steinkopff, Holzhofallee 35, Darmstadt, Germany.

Kunststoffe. Carl Hanser Zeitschriftenverlag GmbH, Leonhard-Eck-Strasse 7, München 27, Germany.

Laboratory. Fisher Scientific Co., 717 Forbes St., Pittsburgh 19, Pa.

Lake States Timber Digest. 419 Lyceum Bldg., Duluth 2, Minn.

Liebigs Annalen. See Annalen der Chemie, Justus Liebigs.

Lubrication. The Texas Co., 135 E. 42nd St., New York 17, N.Y.

Magazine of Wall Street and Business Analyst. Ticker Publishing Co., Inc., 90 Broad St., New York 4, N.Y.

Makromolekulare Chemie. Verlag Karl Alber, Freiburg im Breisgau, Germany, or Verlag Wepf & Co., Basel, Switzerland.

Mechanical Engineering. The American Society of Mechanical Engineers, 29 W. 39th St., New York 18, N.Y.

Melliand Textilberichte. Ebertplatz 3, Heidelberg, Germany.

Messenger. The Black-Clawson Co., Hamilton, Ohio.

Mill & Factory. Conover-Mast Publications, Inc., 205 E. 42nd St., New York 17, N.Y.

Modern Lithography. 175 Fifth Ave., New York 10, N.Y.

Modern Packaging. Modern Packaging Corp., 575 Madison Ave., New York 22, N.Y.

Modern Plastics. Modern Plastics, Inc., 575 Madison Ave., New York 22, N.Y.

Modern Textiles. Rayon Publishing Corporation, 303 Fifth Ave., New York 16, N.Y.

Monatshefte für Chemie und verwandte Teile anderer Wissenschaften. Springer-Verlag, Mölkerbastei 5, Vienna I, Austria.

Monsanto Magazine. Department of Public Relations, Monsanto Chemical Co., St. Louis 4, Mo.
Monthly Catalog U. S. Government Publications. Superintendent of Documents, U. S. Government Printing Office, Washington 25, D.C.
Monthly Labor Review. Superintendent of Documents, U. S. Government Printing Office, Washington 25, D.C.
Monthly Statistical Summary. American Paper and Pulp Association, 122 E. 42nd St., New York 17, N.Y.
National Farm Chemurgic Council. Chemurgic Digest. See Chemurgic Digest.
National Lithographer. The National Lithographer Publishing Co., Inc., 11 Park Place, New York 7, N.Y.
Nature. Macmillan & Co., Ltd., St. Martin's St., London, W.C.2, England.
Neue Verpackung, Die. arani-Verlags-GmbH, Bismarckplatz, Berlin-Grunewald, Germany.
New Technical Books (The New York Public Library). The New York Public Library, 5th Ave. and 42nd St., New York 18, N.Y.
Newsprint Association of Canada. Monthly Newsprint Report. Newsprint Association of Canada, 2280 Sun Life Building, Montreal 2, Canada
Newsprint Service Bureau. Bulletin. 342 Madison Ave., New York, N.Y.
Norsk Skogindustri. Stortingsgaten 14, Oslo, Norway.
Nucleonics. McGraw-Hill Publishing Co., Inc., 330 W. 42nd St., New York 36, N.Y.
Official Gazette of the United States Patent Office. Superintendent of Documents, U. S. Government Printing Office, Washington 25, D.C.
Oil, Paint and Drug Reporter. Schnell Publishing Co., Inc., 30 Church St., New York 7, N.Y.
Packaging Parade. Haywood Publishing Co., 22 E. Huron St., Chicago 11, Ill.
Packet. Packaging Institute, Inc., 342 Madison Ave., New York 17, N.Y.
Paper & Paper Products. Walden, Sons & Mott, Inc., 93 Worth St., New York 13, N.Y.
Paper & Print. Stonhill & Gillis Ltd., 329 High Holborn, London, W.C.1, England.
Paper and Timber (Finland). Unionsg. 19, Helsingfors, Finland.
Paper & Twine Journal. 1860 Broadway, New York 23, N.Y.
Paper Box and Bag Maker. S. C. Phillips & Co., Graham House, 3, Tudor St., London, E.C.4, England.

Paper Container. 41 The Mall, Ealing, London, W.5, England.
Paper Industry. Fritz Publications, Inc., 431 S. Dearborn St., Chicago 5, Ill.
Paper Maker [U. S.] Paper Makers Chemical Department, Hercules Powder Co., Wilmington 99, Del.
Paper-Maker and British Paper Trade Journal. S. C. Phillips & Co., Graham House, 3, Tudor St., London, E.C.4, England.
Paper Making and Paper Selling. Guildhall Publishing Co., Surrey House, 117, High Street, Epsom, England.
Paper Market and British Paper. S. C. Phillips & Co., Graham House, 3, Tudor St., London, E.C.4, England.
Paper Mill News. L. D. Post, Inc., 1440 Broadway, New York 18, N.Y.
Paper Sales. Davidson Publishing Co., 405 E. Superior St., Duluth 2, Minn.
Paper Trade Journal. Lockwood Trade Journal Co., Inc., 15 W. 47th St., New York 36, N.Y.
Paperi ja Puu. See Paper and Timber (Finland).
Papeterie. 9, rue Lagrange, Paris (5e), France.
Papetier de France. 142, rue Montmartre, Paris (2me), France.
Papier, Das. Eduard Roether Verlag, Liebigstrasse 24, Darmstadt, Germany.
Papier, carton et cellulose. Compagnie Française d'Éditions, 40, rue du Colisée, Paris (8e), France.
Papier Geschichte [Beilage zur Zeitschrift "Das Papier"] Verein der Zellstoff- und Papier-Chemiker und -Ingenieure, Forschungsstelle Papiergeschichte im Gutenbergmuseum, Mainz, Germany.
Papierwereld. James Cookstraat 52, Amsterdam-West, Holland.
Papper och Trä. See Paper and Timber (Finland).
Pest Control. 1900 Euclid Bldg., Cleveland 15, Ohio.
Philips Research Reports. N.V. Philips' Gloeilampenfabrieken, Eindhoven (Netherlands).
Philips Technical Review. N.V. Philips' Gloeilampenfabrieken, Eindhoven (Netherlands).
Physical Review. The American Institute of Physics, 57 E. 55th St., New York 22, N.Y.
Physics Abstracts being Science Abstracts-Section A. See Science Abstracts. Section A. Physics Abstracts.
Physics Today. American Institute of Physics, 57 E. 55th St., New York 22, N.Y.
Plastics World. Cleworth Publishing Co., Inc., 22 W. Putnam Ave., Greenwich, Conn.

Power. McGraw-Hill Publishing Co., Inc., 330 W. 42nd St., New York 36, N.Y.

Print. William Edwin Rudge, Publisher, Inc., 17 W. 44th St., New York 36, N.Y.

Printing Equipment Engineer. Willsea Publishing Co., 1276 W. 3rd St., Cleveland 13, Ohio.

Proceedings of the Australian Pulp & Paper Industry Technical Association. See Australian Pulp & Paper Industry Technical Association, Proceedings.

Proceedings of the Indiana Academy of Science. State Library, Indianapolis, Ind.

Proceedings of the Technical Section, British Paper and Board Makers' Association, Inc., St. Winifred's, Welcomes Road, Kenley, Surrey, England.

Pulp & Paper. Miller Freeman Publications, 71 Columbia St., Seattle 4, Wash.

Pulp and Paper Magazine of Canada. National Business Publications, Ltd., Gardenvale, Quebec, Canada.

Quarterly Reviews (London). The Chemical Society, Burlington House, Piccadilly, London, W.1, England.

Rayon and Synthetic Textiles. See Modern Textiles.

Rayon Or'ganon. See Textile Or'ganon.

RCA Review. Radio Corp. of America, RCA Laboratories Division, Princeton, N.J.

Recueil des travaux chimiques des Pays-Bas. Nederlandse Chemische Vereniging, Bureau: Lange Voorhout 5, The Hague, Netherlands.

Reports on the Progress of Applied Chemistry. Society of Chemical Industry, 56 Victoria St., London, S.W.1, England.

Review of Applied Mycology. The Commonwealth Mycological Institute, Ferry Lane, Kew, Surrey, England.

Review of Scientific Instruments. American Institute of Physics, 57 E. 55th St., New York 22, N.Y.

Reviews of Modern Physics. American Institute of Physics, 57 E. 55th St., New York 22, N.Y.

Revue des papiers et cartons. 20, Rue Marie-Stuart, Paris (2e), France.

Revue internationale des industries agricoles. Commission Internationale des Industries Agricoles, 18, Avenue de Villars, Paris (VIIe), France.

Reyon, Synthetica, Zellwolle. See Reyon, Zellwolle und andere Chemiefasern.

Reyon, Zellwolle und andere Chemiefasern. H. Jentgen Verlag KG, Drakestr. 45, Berlin-Lichterfelde-West, Germany.

Rohm & Haas Reporter. Rohm & Haas Company, 222 W. Washington Sq., Philadelphia 5, Pa.

Rubber Chemistry and Technology. Treasurer of the Division of Rubber Chemistry, A. W. Oakleaf, Phillips Chemical Co., 605 Evans Building, Akron 8, Ohio.

School and Society. The Society for the Advancement of Education, Inc., 15 Amsterdam Ave., New York 23, N.Y.

Science. Circulation Dept., American Association for the Advancement of Science, 1515 Massachusetts Ave., N.W., Washington 5, D.C.

Science Abstracts. Section A. Physics Abstracts. The Institution of Electrical Engineers, Savoy Place, Victoria Embankment, London, W.C.2, England.

Scientific Monthly. Circulation Dept., American Association for the Advancement of Science, 1515 Massachusetts Ave., N.W., Washington 5, D.C.

Sewage and Industrial Wastes. Federation of Sewage and Industrial Wastes Associations, 325 Illinois Building, Champaign, Ill.

Share Your Knowledge Review. International Association of Printing House Craftsmen, Inc., 18 E. Fourth St., Cincinnati, Ohio.

Silicate P's & Q's. Philadelphia Quartz Co., Public Ledger Building, Independence Square, Philadelphia 6, Pa.

Soap and Sanitary Chemicals. MacNair-Dorland Co., 254 W. 31st St., New York 1, N.Y.

Society of Chemical Industry (London). Annual Reports on the Progress of Applied Chemistry. See Annual Reports of the Society of Chemical Industry on the Progress of Applied Chemistry.

Southern Pulp and Paper Manufacturer. Ernest H. Abernethy Publishing Co., Inc., 75 3rd St., N.W., Atlanta, Ga.

Special Libraries. The Special Libraries Association, 31 E. 10th St., New York 3, N.Y.

Stain Technology. Biotech Publications, Box 269, Geneva, N.Y.

Standardization. American Standards Association Inc., 70 E. 45th St., New York 17, N.Y.

Stuff Box. Bird Machine Co., South Walpole, Mass.

Survey of Current Business. Superintendent of Documents, U. S. Government Printing Office, Washington 25, D.C.

Svensk Kemisk Tidskrift. Svenska Kemistsamfundet, Stockholm, Sweden.

Svensk Papperstidning. S. Blasieholmshamnen 4A, Stockholm, Sweden.

Tappi. Technical Association of the Pulp and Paper Industry, 122 E. 42nd St., New York 17, N.Y.

Taylor Technology. Taylor Instrument Companies, 95 Ames St., Rochester 1, N.Y.

Technical Bulletin. The Technical Section of the British Paper and Board Makers' Association, Inc., St. Winifred's, Welcomes Road, Kenley, Surrey, England.

Technical News Bulletin, National Bureau of Standards. Superintendent of Documents, U. S. Government Printing Office, Washington 25, D.C.

Technology Review. Room 1-281, Massachusetts Institute of Technology, Cambridge 39, Mass.

Textil-Rundschau. Verlag Zollikofer & Co., St. Gallen, Switzerland.

Textile Or'ganon. Textile Economics Bureau, Inc., 10 E. 40th St., New York 16, N.Y.

Textile Research Journal. Textile Research Institute, Inc., 10 E. 40th St., New York 16, N.Y.

Textile Technology Digest. Institute of Textile Technology, Charlottesville, Va.

Textile World. McGraw-Hill Publishing Co., Inc., 330 W. 42nd St., New York 36, N.Y.

Timber Topics. Allis-Chalmers Mfg. Co., Milwaukee, Wis.

Transactions of the Faraday Society. The Aberdeen University Press Ltd., 6 Upper Kirkgate, Aberdeen, Scotland.

Trend in Engineering at the University of Washington. Engineering Experiment Station, 127 More Hall, University of Washington, Seattle 5, Wash.

Tropical Woods. The Editor, 205 Prospect St., New Haven 11, Conn.

Unasylva. Documents Office, FAO, Viale Terme di Caracalla, Rome, Italy.

University of Illinois Bulletin. Engineering Experiment Station Bulletin Series. The Engineering Experiment Station, University of Illinois, Urbana, Ill.

University of Illinois Bulletin. Engineering Experiment Station Circular Series. The Engineering Experiment Station, University of Illinois, Urbana, Ill.

Verpackungs Rundschau. P. Keppler Verlag, Schliessfach 2407, Frankfurt a. Main, Germany.

Wallerstein Laboratories Communications. Wallerstein Laboratories, 180 Madison Ave., New York 16, N.Y.

Water Pollution Abstracts. H. M. Stationery Office, York House, Kingsway, London, W.S.2, England.

Wilson Library Bulletin. The H. W. Wilson Co., 950-972 University Ave., New York 52, N.Y.

Wochenblatt für Papierfabrikation. Güntter-Staib Verlag, Biberach an der Riss (Württemberg), Germany.

World's Paper Trade Review. Stonhill & Gillis, Ltd., 329, High Holborn, London, W.C.1, England.

Zeitschrift für physikalische Chemie. Akademische Verlagsgesellschaft Geest & Portig K.-G., Leipzig, Germany.

Zeitschrift für wissenschaftliche Mikroskopie und für mikroskopische Technik. S. Hirzel Verlag, Stuttgart, Germany.

ERRATA

Volume 22

Page 31, line 1 of second and third abstracts, read "Papier" for "Papiers."
Page 58, line 6 from bottom of last abstract, read "The majority of rayons" for "majority of cottons."
Page 67, line 2 of third abstract under Folding Boxes, read "Canadian" for "U. S. patent."
Page 76, line 3 of first abstract under Molded Pulp Articles, read "Corporation" for "Company."
Page 96, last line of page, read "Fibreboards Products Inc." for "Fibreboard Products Corp."
Page 144, line 1 of last abstract, read "Reynolds, R. R." for "Reynolds, S. R."
Page 174, line 3 of first abstract, insert "spruce" between "unbleached" and "sulfite."
Page 209, line 1 of second abstract, read "Reich, J. G." for "Reich, I. G."
Page 243, line 1 of last abstract, read "Jørgensen" for "Jørgenson."
Page 279, line 1 of sixth abstract, read twice "Fibre Containers" for "Fibreboard Containers."
Page 283, line 9 from bottom of last abstract, insert "evaporating and" between "for" and "burning."
Page 284, second abstract from bottom by Birchard, add Paper Trade J. reference incorrectly listed on page 285, second abstract by Hinton.
Page 285, line 3 of second abstract, delete Paper Trade J. reference.
Page 324, line 1 of first abstract, read "Verne, W." for "Verna, W."
Page 332, line 1 of third abstract, read "Vilars, J." for "Villars, J."
Page 376, line 4 of abstract under Machinery—Vats, read "cylinder-type" for "Yankee-type."
Page 429, line 3 of second abstract, read volume "5" for "6."
Page 433, line 1 of fourth abstract, read "B. S. Centrallaboratorium AB" for "B. S. CENTRALLABORATORIUM AB."
Page 475, line 2 of third item listed, read "992 p." for "922 p."
Page 479, line 1 of fourth abstract, read "Breitveit, K. V." for "Breitveit, K. B."
Page 495, line 3 of second abstract under History, read "(1952)" for "(1951)."
Page 502, line 2 of second abstract, read volume "69" for "59."
Page 545, third abstract, read "MACHINERY—SCREENS" for "MACHINERY—PUMPS."
Page 596, line 2 of second abstract, read "Pulp and paper and the future" for "Pulp and paper in the future."
Page 597, line 2 of third abstract, insert volume "1" between "Cellulose" and "no. 1."
Page 605, line 2 of second abstract, insert volume "1" between "Cellulose" and "no. 1."
Page 681, third abstract, second line, read "15" for "134."
Page 684, third abstract, read "PHYSICAL TESTING—PULP—SHEET-MAKING PROCEDURE" for "PHYSICAL TESTING—PAPER—SHEET-MAKING PROCEDURE."
Page 747, line 7 and 13 of fourth abstract, read "dehydrodivanillin" for "dehydrovanillin," and line 8, "dehydrodivanillic acid" for "dehydrovanillic acid."
Page 790, second to fifth abstracts listed under MACHINERY—JOGGERS, transfer to page 796 and list following third abstract under PAPER SPECIALTIES.
Page 834, line 6 of first abstract, read "Voith-Nacke" for "Voith-Naske."
Page 841, line 3 of second abstract read "no. 24" for "no. 25."
Page 887, line 3 of third abstract, read "Vickers-Armstrongs Limited" for "Vickers-Armstrong Limited."
Page 993, line 1 on top, read "moistureproof" for "moisterproof."
Page 942, line 9 of second abstract, read "specially washed kraft, manila bond" for "specially washed kraft manila bond."